

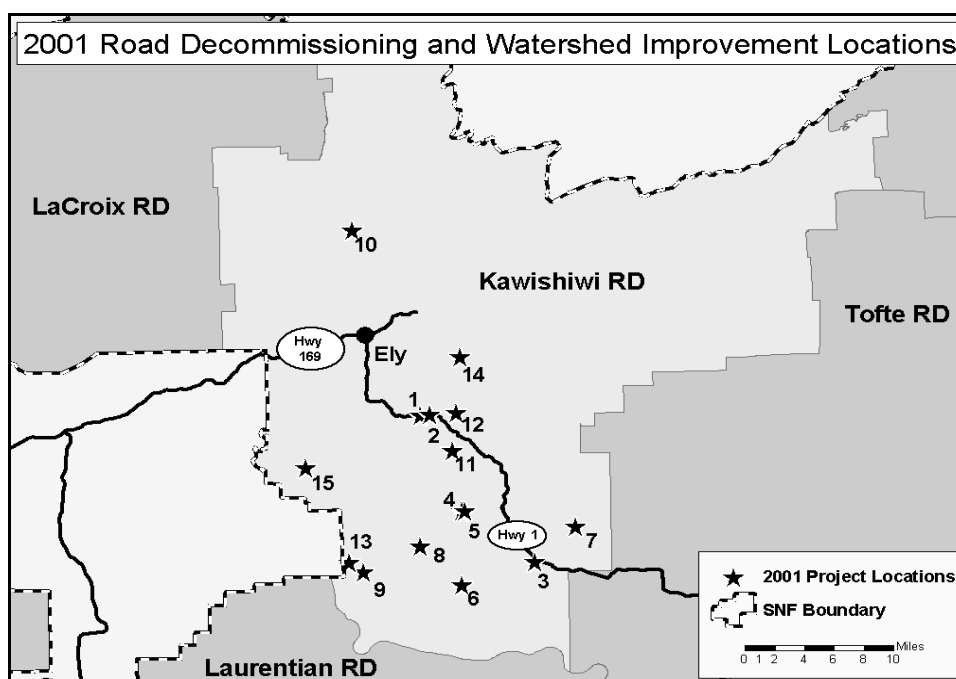
APPENDIX L1. ROAD DECOMMISSIONING

Road Decommissioning & Watershed Improvement Effectiveness Evaluation on the Kawishiwi District

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Superior National Forest Monitoring Program
July, 21st 2005

Background

During the summer of 2001, road decommissioning and watershed improvement projects were completed on 15 sites within the Kawishiwi District of the Superior National Forest. A description of the work carried out on each site can be referenced by project/site number from the contractor's work list attached to this document. The majority of the work involved the removal of fill materials and culverts from wetland areas, planting of wetland vegetation and installation of road blockages near junctions with system roads and trails. Photo documentation exists for seven of the fifteen work sites, taken either before and/or during excavation.



These sites were visited between July 8th and July 14th of 2005 by biological technicians from the SNF Monitoring Program to assess the effectiveness of the closure and the success of natural and mechanical re-vegetation efforts. Photos were taken at all sites. In addition, preexisting photo points were duplicated. At the time of this report, sites visited were in their fourth year of vegetation recovery. General re-vegetation conditions were noted, as well as any off-road and/or ATV use. An overall project evaluation and specific recommendations follow the individual site summaries.

Site 1 Evaluation – Old Highway 1 (Site UTM N: 5296670; E 592598)

History – Removed asphalt. Removed road fill from wetland areas. Conducted vegetation plantings to reestablish wetland vegetation. Installed road blockage in west end of segment. See work list for more specific description of work activities.



After installation of road blockage, 2005. Most of the boulder field invisible due to veg growth.



Before work activities, 2000.



Wetland area after removal of road fill, 2001.



Alder, rush and sedge growth, 2005.

Site 1 Summary

The installation of a scattered boulder field at this site has been an effective barrier to ATV travel. There is no evidence of ATV travel through the site. The upland sections have good grass and forb cover, but woody vegetation is scarce; however, a few two year old jackpine seedlings are starting to come in on the upland section, most likely seeding in from adjacent trees (see photos above). The upland section is still a fairly compacted gravel mix which may take time to loosen up and allow more woody vegetation growth.

The wetland area, aided by the removal of road fill and the availability of water, has seen significant vegetation recovery. In addition, alders (*Alnus rugosa*) taken on-site, were transplanted into the roadway, giving immediate woody vegetation cover. A variety of wetland plants are providing a thick cover that renders the old roadway virtually invisible. In particular, wool-rush (*Scirpus cyperinus*), is

growing at a height of 4 to 5 feet tall and is providing the majority of the cover. See Map on Page 5 for Sites 1 & 2.

Site 2 Evaluation – Old Highway 1 (Photopoint UTM N: 5296748; E: 593576)

History – This is a continuation of old Highway 1, located on the south side of Highway 1 today. Barrier installed on west end. Road fill removal and vegetation plantings in three wetland portions of road. Old asphalt remains in the upland portions of the old roadway. No pre-work or excavation work photos were located. All photos below taken in July, 2005.



Old asphalt ends where road fill was removed. Alder transplanted to center of roadway



Close-up of wetland re-vegetation on the old roadway. Good alder and sedge growth.

Site 2 Summary

Both the east and west ends of this segment are virtually invisible from Highway 1. There is no evidence of ATV use. Good re-vegetation at the three wetland restoration sites. Transplanted alder is growing well. A wide variety of wetland plants filling in the restoration areas. Asphalt still exists in several sections.

Site 3 Evaluation Old Hwy 1 near Jct. with Hwy 2 (Site UTM N: 5279090; E: 605039)

History – Removed asphalt. Removed road fill from wetland areas. Conducted vegetation plantings to reestablish wetland vegetation. No berm or blockage was installed. No pre-work or excavation work photos were located. All photos below taken in July, 2005.



East end of section, start of asphalt removal.



East end of wetland revegetation looking west



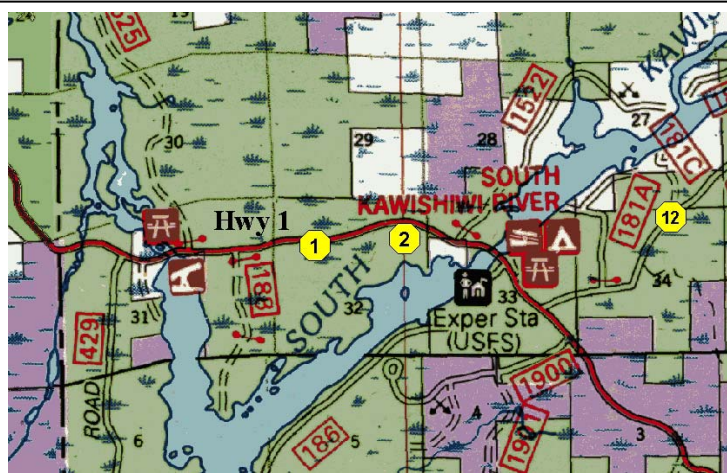
West end of wetland reveg looking east.



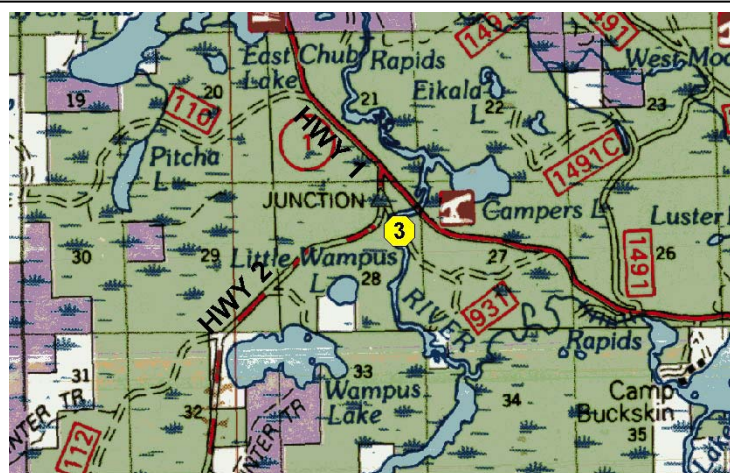
Purple-fringed orchid, west end of reveg.

Site 3 Summary

Good vegetation recovery along the wetland portion of the old roadbed. Transplanted alders doing well. Some aspen transplants died, but still provide a nice visual breakup of the old road corridor. Nice variety of wetland and upland plants naturally filling in the area. Purple-fringed orchid (*Platanthera psychodes*) growing on the west end of the old roadbed. There is light "exploratory" ATV use from the existing asphalt to the end of the project (Stony River). Berm or boulder field blockage recommended for installation on the east end where asphalt ends. Some compacted gravel fill still remains on site and may limit the speed of woody vegetation establishment. See Map on Page 5.



Project Sites 1,2 and 12



Project Site 3

Site 4 Evaluation –Abandoned Road Segment, FR424G (UTM N: 5285235; E: 597109)

History – It appears that the old asphalt was removed, but very little of the underlying gravel fill was removed. There is very little evidence of wetland vegetation planting, if any at all. Boulder field blockage installed 100 yards off of FR 424, near the junction with the snowmobile trail.



Start of segment at junction with FR 424, 2000.



Same photopoint, 2005



Beginning of Road Blockage, 2005.

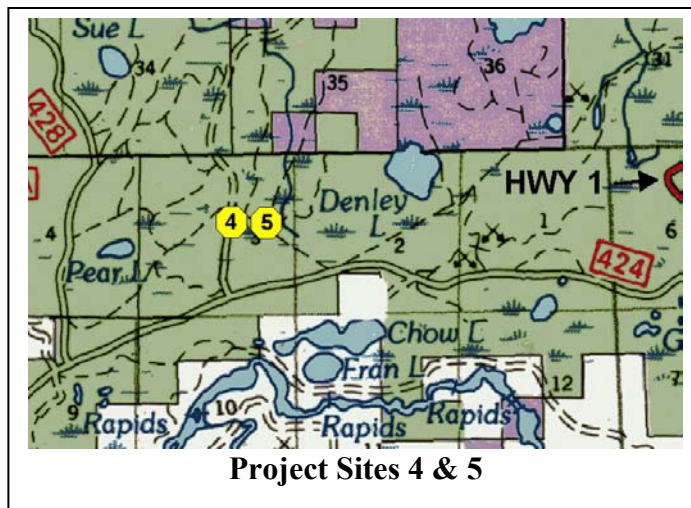
Site 4 Summary

With much of the original gravel road fill still in place, native vegetation recovery has been slow. Some alder growing in, but not fast enough to deter the potential for ATV travel. However, the blockage has been effective in stopping "short-cut" travel between the snowmobile trail and FR 424. A non-native grass mix may have been used on upland segment. The best woody vegetation establishment is taking place within the boulder field. This is possibly due to 1) more fill being removed and moved around, 2) favorable microhabitat, 3) lack of vehicle use, or 4) a combination of some of these. With no evidence of wetland re-vegetation plantings, reestablishment of wetland species will be slow in the lowland areas.

See Map on Page 7.

Site 5 Evaluation – Old Temporary Logging Road (UTM N: 5318735; 585139)

History - Removed culvert and road fill from wetland areas at mile 0.04 and 0.36 from beginning of segment. Installed berm (fill removed from old roadbed) 100 ft from junction with snowmobile trail. Conducted vegetation plantings to reestablish wetland vegetation.



Site 5 Summary

Upland portions of old temp road gradually filling in with alder and aspen. Wetland portion looks very good with a wide variety of wetland vegetation naturally filling in. There is free-flow of water through the excavated site. Although the berm is not much of an impediment to ATV travel, there is no evidence that any ATV travel is occurring. Motorized travel through the excavated wetland portion would be virtually impossible.

Site 6 Evaluation – Old Temporary Logging Road (UTM N: 5276338; E: 5971000)

History – Removed road fill from wetland beginning at mile 0.25 of segment. Wetland vegetation transplanted from surrounding area. Road blockage (boulder field) placed 100 ft from junction with FR112. No pre-work or excavation work photos were located. All photos below taken July, 2005.



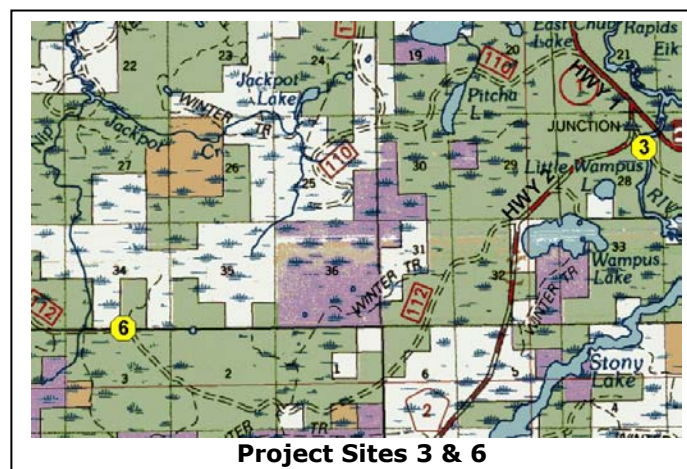
Boulder field road blockage, 2005.



Wetland reveg portion of temp road, 2005.
Photopoint UTM N: 5276690; E: 597317

Site 6 Summary

The boulder field appears to be an effective block to ATV travel. No evidence of such travel observed. Upland portions of temp road filling in gradually with woody vegetation (aspen 3-4 ft tall, balsam and black spruce around 1 foot in height, little to no alder). Wetland restoration portion of the segment filling in very well with a variety of plant species. Old roadbed abruptly fills in with alder and other woody vegetation just after wetland restoration site (see 2nd picture above). Fill removed from the wetland area was placed and shaped onto the upland portions of the old roadbed, possibly on top of native soil, back towards FR112. This may partially explain why the temp road after the wetland has filled in with thick woody cover, but the section between the wetland and FR112 has seen nowhere near the same amount of re-growth. This is possibly due to high gravel content and soil compaction.



Site 7 Evaluation – Old Segment of FR 378B (UTM N: 5283312; E: 609498)

History – Removed road fill materials and culvert from stream channel and floodplain to reestablish free-flow. Transplanted wetland vegetation into the restoration area. Moved road fill materials to upland road sections and established a parking area prior to reaching the floodplain. No pre-work or excavation work photos were located. All photos below taken July, 2005.



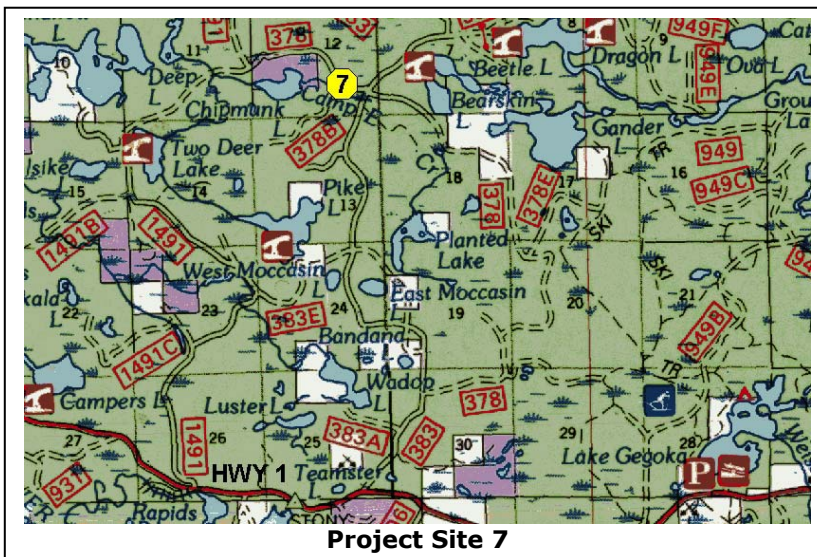
From parking area, looking across channel.



Close-up of stream channel and floodplain.

Site 7 Summary

Apparently, the old road was intended to remain open up to the stream channel, as indicated by the creation of a level area for parking just above the floodplain. Unofficial fire ring constructed in the parking area, possibly from last fall. No evidence of ATV travel across the stream channel, but the potential exists, especially during drier parts of the summer season. Good (mostly herbaceous) revegetation throughout the floodplain with a wide variety of wetland species. One clump of alder growing near the center of the channel on a small hummock, possibly transplanted during excavation.



Project Site 7

Site 8 Evaluation – Old Temporary Logging Road (UTM N: 5280974; E: 592535)

History – Removed road fill from wetland beginning at approximately mile 0.1 from junction with FR 1431. Excavation work included transplanting of wetland vegetation. No road blockage installed at junction with FR 1431. No pre-work or excavation work photos were located. All photos below taken July, 2005.



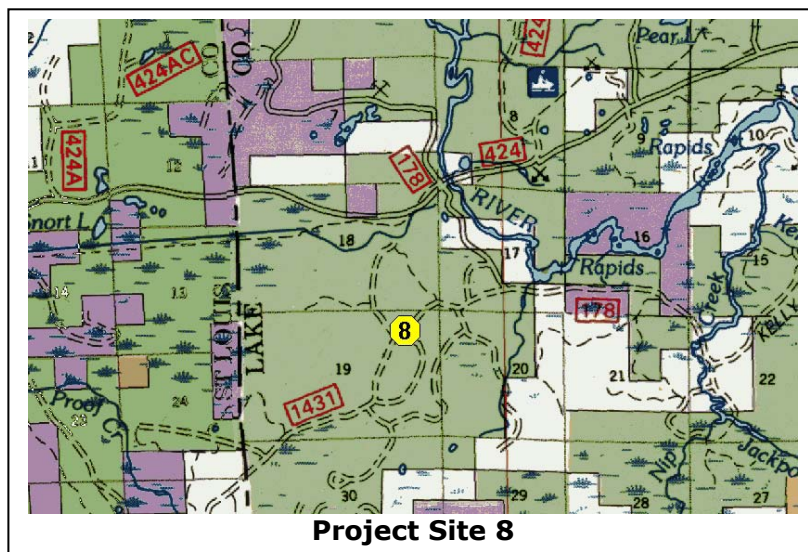
ATV tracks through wetland reveg area



Close-up of ATV damage through wetland.

Site 8 Summary

Overall, good wetland vegetation establishment in the excavation area, but ATV damage through the center. This site could have used more alder transplanting and boulder placement throughout the restoration area to discourage ATV use. Further, a road blockage near the junction with FR1431 would have served as an initial and possibly more effective deterrent to ATV use.



Project Site 8

Site 9 Evaluation – Abandoned Segment of FR423 at the Dunka River

History – Removed road fill from the Dunka River floodplain beginning at mile 1.6 on FR423. Created parking area and berms on the east side of the river. Excavation work included wetland vegetation transplantings.(UTM N: 5277915; E: 586436)



West side, from stream, towards the parking area, 2001. Fill was removed and wetland vegetation planted.



Same area after excavation and plantings, 2005. Alder and other transplants doing very well.



West side, between stream and parking area, 2001. Road fill being removed from wetland revegetation area



Same area after excavation and plantings, 2005. Good mix and coverage of wetland vegetation.



East side during excavation from streamside, 2001



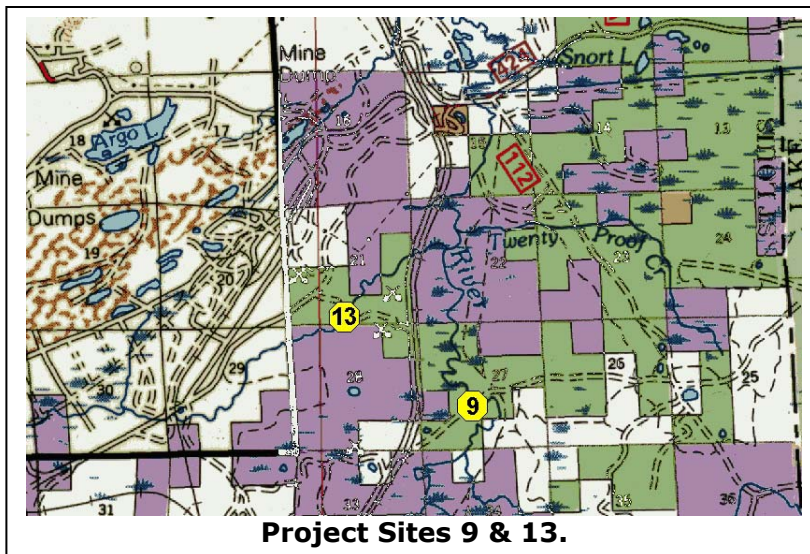
Same area after excavation and planting, 2005.



East side from parking area towards stream, 2001.



Same area after excavation and planting, 2005



Site 9 Summary

This was an extensive restoration area involving significant amounts of excavation, boulder placement and vegetation transplanting. Road blockages in the form of boulder fields were placed on each side of the Dunka River. No evidence of ATV travel through the floodplain area. Wetland vegetation plantings are doing well, with several large alder filling up the old travel corridor. Upland portions of the site (see picture above) are filling in with vegetation, but at a much slower rate than the wetland areas. A non-native grass seed mix may have been used on the upland segments. Lack of organic matter and competition from non-native grass seed mix may limit the type of native plant species to reestablish the upland areas.

Site 10 Evaluation –Old Temp Logging Road (off FR 459 UTM N: 5318735; E:585139)

History –Removed road fill and culvert from stream channel and floodplain at mile 0.01 of segment. Excavation work included vegetation transplanting to reestablish wetland vegetation.

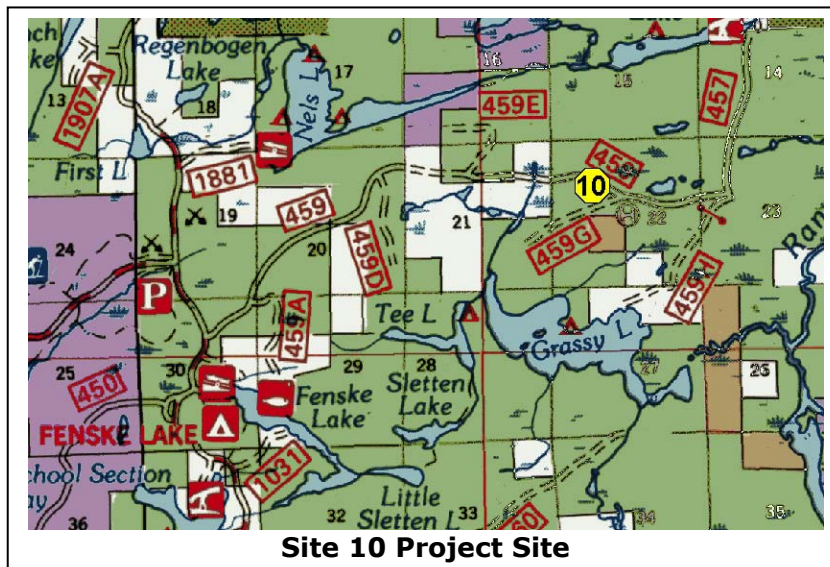


At junction with FR 459



25 ft off of FR 459

Site 10 Summary: Old temp road virtually invisible from FR 459. Wetland vegetation transplants and natural regeneration doing very well. No evidence of ATV use.



Site 10 Project Site

Site 11 Evaluation – Abandoned Segment of FR 1902 (UTM N: 5292403; E: 596079)

History – Removed roadway fill material and culvert from the stream channel and floodplain at mile 1.5 from the north access with Highway 1. Excavation work included transplanting wetland vegetation and

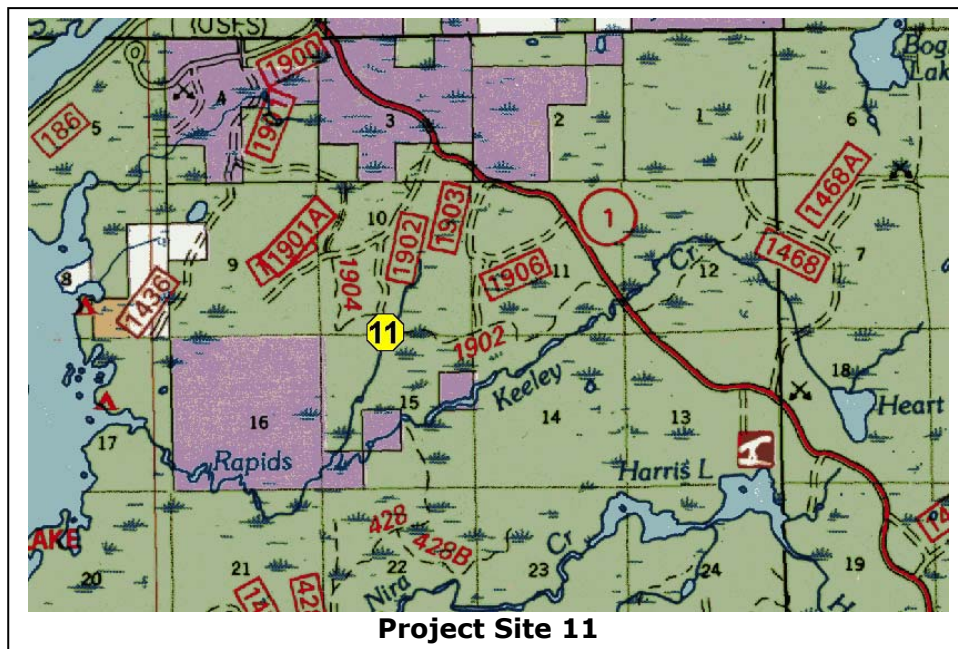


Excavation work - wetland segment, 2001



Same area, 2005.

Site 11 Summary: Very good vegetation recovery with sedge filling in excavation area naturally; however, some fill still visible. Good free-flow of stream channel. No evidence of ATV use.



Site 12 Evaluation – Abandoned segment of FR 181 C (UTM N: 5296988; E: 596460)

History – Removed road fill from wetland segments at mile 0.10, 0.21, and 0.26. Transplanted wetland vegetation. Installed road blockage boulder field 100 feet off of junction with FR 181.



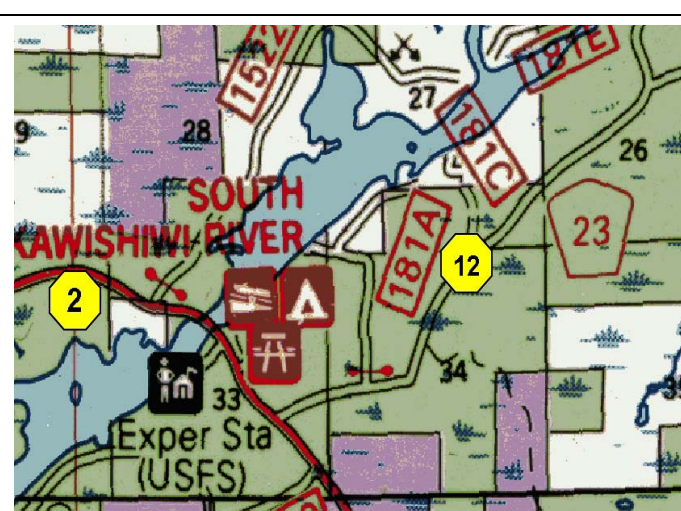
Pre-excitation, 2000.



After removal of 1-2" of road fill, 2001.



After 4 years, 2004.



Project Sites 2 & 12

Site 12 Summary

After the removal of 1 to 2 inches of road fill and 4 years of growth, this site is at about the same stage as the pre-excitation work. The old roadway is comprised of mostly light grasses and sedges, with the majority of grasses being non-native. There are a few pockets of young alder just starting to become established on the roadway. Although not stated in the work contract or the daily diary, it is likely that some type of grass seed mix was used here. These mixes are composed of non-native grasses and were commonly used to re-vegetated disturbed areas at various times. It is possible that a combination of soil compaction and competition from a grass seed mix may be responsible for the slow establishment of native and more woody vegetation. The application of leaf litter or other organic material to the recently excavated road surface may have helped surrounding vegetation to seed and/or spread onto the roadway.

Site 13 Evaluation – Old Temp Logging Road (UTM N: 5279051; E: 584798)

History – Removed road fill from wetland beginning at mile 0.50 from SC 623 and transplanted wetland vegetation. No pre-work or excavation work photos were located. All photos below taken July, 2005.



View across wetland restoration segment of the old temp road with ATV tracks.



Close-up of ATV tracks and soil compaction limiting vegetation recovery.

Site 13 Summary

The work contract does not mention installation of a berm, but there is one at about mile 0.3 from SC 623. ATVs have been getting around this berm quite easily. This road is receiving some occasional ATV travel, possibly during hunting season, and is accessible from both the east and west ends of the segment. The wetland restoration segment of the old temp road is filling in fairly well; however, occasional ATV travel through the center is limiting vegetation recovery. Tamarack seedlings, 1 to 2 years old, are beginning to fill in throughout the wetland segment. Transplanting alder along the center of the wetland and placement of boulder fields at each end during excavation work would have discouraged ATV use through the wetland. *See Map on Page 11.*

Site 14 Evaluation – Tomahawk Snowmobile Trail (UTM N: 5303580; E 596895)

History – Installed 5 drainage dips and covered with drain rock. This site is accessed from the end of the Kawishiwi Trail. This was a watershed improvement project and not a road decommissioning. No excavation work pictures were located.

Site 14 Summary

The exact location was not found. Since installation of the drainage dips, Potlatch Corporation has improved this portion of the Tomahawk Trail to serve as a travel route to their land holdings by adding road fill to the surface. ATV use is authorized on this portion of the Tomahawk Trail. No pictures were taken at this time.

Site 15 Evaluation – Old Temp Logging Road (UTM N: 5290321; E 580134)

History –Removed road fill at the first creek crossing 0.2 miles east of the power line. Transplanted native vegetation and reestablished the natural drainage way. Installed road blockage on the west side of the drainage way.



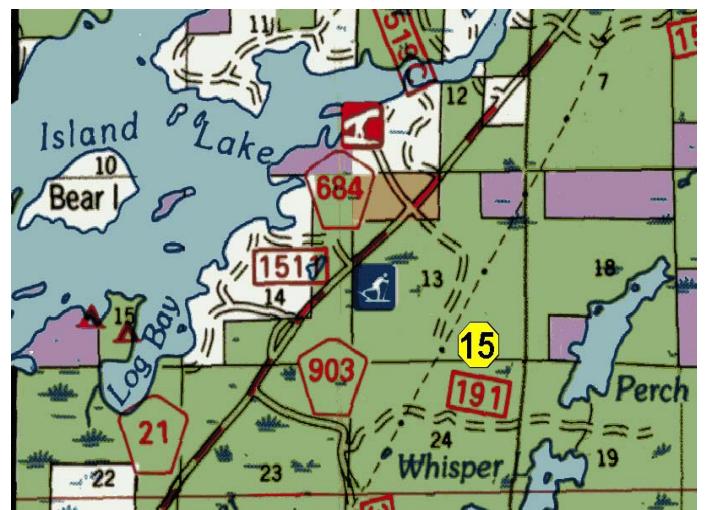
Pre-excitation work, 2000.



Same area with road blockage, 2005.



Close-up of drainage free-flow through the site & faint ATV tracks through the center.



Project Site 15

Site 15 Summary

The road blockage (line of boulders) has stopped vehicle traffic, but one boulder was moved to allow ATV access through the site. This site receives occasional ATV use. Older alder transplant doing good, but the site could have used a few more. Overall, a variety of wetland vegetation is filling in and young alders are numerous. This site should re-vegetate well provided that ATV traffic remains light and/or diminishes.

Overall Project Evaluation

The following evaluations and recommendations are based on photos and field visits to the 15 aforementioned road decommissioning and watershed improvement project sites. These sites were visited between July 8th and July 14th, 2005 by biological technicians Chad Yost, Annie Peterson and Fred Ossman with the Superior National Forest Monitoring Program.

1. Installation and effectiveness of road blockages.

- A. Berm or Mound** – Initially, this type of blockage may deter travel, but after several years of settling, vegetation growth and erosion, are often breeched by ATV users. This type of blockage is generally successful in stopping wide-based vehicles, but not ATVs.
- B. Boulder Line** – Unless boulders of significant size are used, it is generally easy to move one boulder with the aid of an ATV or other vehicle. Typically, only one boulder needs to be moved to allow ATV access through the blockage.
- C. Scattered Boulder Field** – This was observed to be the most successful method of blocking off a road. Breeching this type of blockage requires a series of boulder moves which may be deemed as being too time consuming and/or too conspicuous.

Additional road blockage techniques should include the planting of shrubs and small tree saplings using a backhoe bucket or similar implement. Even if these transplants die, they still serve as physical barriers.

2. Removal of asphalt and road fill materials to facilitate re-vegetation.

- A. Upland, Dry Conditions** – On these segments, the removal of 1 or 2 inches of road fill material does not guarantee rapid re-vegetation by native plants. Often, the remaining substrate is still very compacted and of poor nutrient quality. These conditions are prone to rapid colonization by non-native grasses and forbs, which are adapted for such conditions, and once established, difficult to out compete. Further, it has been a past practice to use standardized (mostly non-native) seed mixes to re-vegetated disturbed areas. Although not listed in the work contract for this project, it is highly likely that a mostly non-native grass seed mix was used on some of the drier upland road decommissioning segments (per Mike Manlove and Dan Hernesmaa).

A better solution would be to loosen-up the remaining substrate after removal of the undesired road fill material and to add organic matter (leaf litter, woody debris, etc). This would provide nutrients through decomposition and microhabitat for seed germination and maturation. Seeding in these sites can also be effective if native material is used. Some programs will collect seed on-site and redistribute within the project area.
- B. Lowland, Wetland, Moist Conditions** – On these segments, the removal of road fill material can be very effective in promoting the natural and rapid re-vegetation of wetland plant species. Some of our local rush (*Juncus*, *Scirpus*) and sedge (*Carex*) species, as well as speckled alder (*Alnus rugosa*), seem to rapidly re-colonize excavated portions of wetland road segments. These wetland restoration sites also can be effective road blockage tools for road closures.

3. Fill materials removed from wetlands placed and shaped onto upland road segments.

Many of the project sites called for removed wetland road fill to be placed on existing upland road segments. If the intent is to obliterate and return a road segment to a more natural state, it is recommended that this fill not be placed on the upland segments. The addition of more gravel and inorganic material to a roadbed will further slow the re-vegetation process. Creation of a berm with this material might be a better option. If there is no alternative, then this material should be re-deposited as loosely as possible along the old roadway.

4. Vegetation planting (transplanting) to reestablish vegetation.

A. Wetlands

From the Contract Specifications for this project (02020 1.01 Re-vegetation of Wetlands):

- “ In conjunction with removal of road fill materials, the Contractor shall introduce wetland vegetation from the surrounding wetland (within backhoe reach) into the newly uncovered wetland area within the roadway. Specifically, the Contractor shall remove a backhoe bucket of soil from the uncovered wetland and place it adjacent to a clump of vegetation in the nearby wetland. Then, the Contractor shall remove the vegetative clump and ‘plant’ it in the hole previously created in the excavated roadway...”

This technique has proven to be very effective and successful in wetland areas. After 4 years, most of these transplants are alive and doing well. Some woody species may be more sensitive than others, but alder seems to have a tolerance for transplantation. As a general rule, the more soil and root mass transplanted, the greater the success.

B. Upland/Dry Sites

From the Contract Specifications for this project, section 02040 – Installing Road Blockages, it states that the Contractor shall:

“...plant clumps of brush vegetation and small tree saplings into the roadway at an average spacing of 10-15 feet. This planting shall be accomplished in the same manner as described above in wetland re-vegetation”

There is little to no evidence that this was done at any of the 15 sites that had road blockage features installed, so the success of this technique cannot be evaluated. Because these transplants would be more susceptible to drying out during dry periods, some mortality can be expected; however, the bigger the root ball moved, the greater the chances of survival. Further, a few weeks of supplemental watering can help to increase survivorship. Even if these transplants die, they still serve as a visual and physical barrier to the road corridor and create microhabitat for seed and seedling establishment.

Kawishiwi Road Decommissioning & Watershed Improvement Projects Contract Specifications Table of Contents

DIVISION 1 – GENERAL REQUIREMENTS

01010 – SUMMARY OF WORK

Part 1 – General

1.01 Description of Work

Provide for and furnish all labor, superintendence, materials, permits, tools, equipment, transportation, certifications, and insurance necessary to properly decommission the attached list of old roads and perform the required watershed improvements work items as described in the Work List, including removing road fill from wetlands, re-establishing vegetation in the uncovered wetlands, removing old culvert pipes, re-establishing natural drainage ways and constructing road blockages at the prescribed location on the roads.

1.02 Safety

The Contractor shall conduct their operations in a safe manner to ensure the safety of their employees, Forest Service employees and the general public, and shall comply with all local, State and OSHA safety requirements.

01020 – MEASUREMENT AND PAYMENT

Part 1 – General

1.01 Measurement

Each road project shall be paid for on a LUMP SUM basis, as shown in the Schedule of Items, with the LUMP SUM price for each road representing the total cost to complete all work activities as listed in the Work List for each.

1.02 Payment

The LUMP SUM completion of work activities for each road shall be paid for at the contract unit price, and shall be full compensation for the work done in accordance with these specifications and the work list.

DIVISION 2 – SITE WORK

02010 – LOCATION OF ROAD PROJECTS

Part 1 – General

1.01 Location Maps

The location of each road project is shown on the attached maps. Access to the project sites using Forest Service roads may require removal of windfall trees and travel along brushed-in roads. Each project site varies in the amount of brush and vegetation on the road.

02020 – REMOVAL OF FILL MATERIALS FROM WETLANDS

Part 1 – General

1.01 Removal of Fill Materials

Where specified in the Work List, roadway embankment fill materials shall be excavated to grade elevation approximately 3 inches below the natural surface of the surrounding wetlands. All excavated fill materials shall be removed from the wetlands and placed in designated disposal areas as approved by the Government. Excavated materials may be directly placed in disposal areas if they are located close by, or they may require hauling by truck to the disposal areas.

Fill materials placed in disposal areas shall be sloped smooth to drain and to match the local ground contours of the disposal area as is practical and as approved by the Government.

1.02 Re-vegetation of Wetlands

In conjunction with removal of road fill materials, the Contractor shall introduce wetland vegetation from the surrounding wetland (within backhoe reach) into the newly uncovered wetland area within the roadway. Specifically, the Contractor shall remove a backhoe bucket of soil from the uncovered wetland and place it adjacent to a clump of vegetation in the nearby wetland. Then, the Contractor shall remove the vegetative clump and “plant” it in the hole previously created in the excavated roadway. Finally, the soil placed in the wetland shall be placed in the hole created by removing the vegetative clump.

Vegetative clumps shall be planted in the excavated roadway in a random pattern but on the average about 10-feet apart, and shall be selected to represent the variety of vegetative types present in the nearby wetland.

02030 – REMOVAL OF CULVERTS

Part 1 – General

1.01 Removal of Culverts

Culverts specified for removal shall be removed with minimum damage and hauled to a Forest Service gravel pit designated by the Government for storage. The storage location in the pit will be specified by the Government.

1.02 Removal of Fill Materials

Road fill materials shall be removed from the natural drainage ways and placed in the adjacent roadway. The drainage way shall be shaped and smoothed to conform with the natural contours of the drainage way. The excavated material placed in the adjacent upland roadway shall be also shaped and smoothed to conform with the natural ground contours.

02040 – INSTALLING ROAD BLOCKAGES

Part 1 – General

1.01 Road Blockages

Where specified on the work list, the Contractor shall install road blockages at the locations on the road as approved by the Government.

A road blockage shall consist of pulling rocks, logs and other debris into the existing roadway for a length of 100-feet and over the full width of the road in order to render the roadway impassable to highway legal vehicles. In addition to debris, the Contractor shall “plant” clumps of brush vegetation and small tree saplings into the roadway at an average spacing of 10-15 feet. This “planting” shall be accomplished in the same manner as described above in wetland re-vegetation.

02050 – INSTALLING DRAINAGE DIPS

Part 1 – General

1.01 Drainage Dips

Drainage dips shall be approximately 10-ft wide by 1.5-ft deep excavated swales constructed across a road on steeper slopes to catch water running down the roadway and safely direct it away from the road. Normally an outlet ditch is also constructed outside the roadway to further direct water away. The dip is protected with a 3” layer of 1.5” drain rock (2-3 cy) to prevent erosion of the dip. Locations will be staked by the Government.

Road Decommissioning & Watershed Improvement Projects Work List

Project#	Road Project Location	Description of Work Activities
1	T62N, R11W, S32	Old Highway #1: 1. Remove the old road asphalt (2” thickness) which occurs on 75% of this 0.3 mile road segment. Haul asphalt to the Denley Pit 11 miles to the south along FR 424 (1 mi. east of Hwy 1). 2. Remove 350 cy of road fill from wetland beginning at MP 0.03 from west end of segment. (1-foot avg. depth) 3. Remove 400 cy of road fill from wetland beginning at MP 0.28 from west end of segment. (1-foot avg. depth) 4. Remove 75 cy of road fill from wetland beginning at MP 0.28 from west end of segment. (½-foot avg. depth) Move road fill materials to upland road sections and shape on roadway. Excavation work includes vegetation planting to re-establish wetland vegetation. Install road blockage in west end of segment 100-ft from Hwy 1. Quantity Summary: 250 cy asphalt hauled to Denley Pit. 825 cy road fill excavation.
2	T62N, R11W, S32- 33	Old Hwy #1: (Access more difficult due to 3-5” dbh trees. Backhoe and dozer work only.) 1. Remove 250 cy of road fill from wetland beginning at MP 0.00 from the east

Project#	Road Project Location	Description of Work Activities
		end of the segment.2. Remove 50 cy of road fill from wetland beginning at MP 0.19 from the east end of the segment.3. Remove 120 cy of road fill from wetland beginning at MP 0.28 from the east end of the segment.Move road fill materials to upland road sections and shape on roadway. Excavation work includes vegetation planting to re-establish wetland vegetation.Install road blockage in west end of segment 100-ft from Hwy 1. Quantity Summary: 420 cy road fill excavation.
3	T60N, R10W, S28-27	Old Hwy #1: (Buried power cable exists in the roadbed 1.Remove about 120 cy of asphalt and haul to the Denley Pit located 7 miles from the project.2. After determining where the power cable is located, remove roadway fill material as is practical. For estimating purposes, assume ½ the fill, or 600 cy, can be removed. Place fill in road cut at beginning of project.3. Remove one 24" culvert if possible and haul to Denley Pit.Excavation work includes vegetation planting to re-establish wetland vegetation as is practical.Quantity Summary: 120 cy asphalt removal 600 cy road fill excavation.
4	T60N, R11W, S03	Abandoned Road Segment: 1. Remove 130 cy of roadway fill material across 325-ft wetland and re-establish wetland vegetation. Place material in adjacent upland road segment. 2. Install road blockage 100-ft from snowmobile trail. Quantity Summary: 130 cy road fill excavation.
5	T60N, R11W, S03	Old temporary logging road north from snowmobile trail: 1. Remove 440 cy of road fill from wetland beginning at MP 0.04 from the beginning of the segment. Remove 18" culvert and haul to Denley Pit. 2. Remove 50 cy of road fill from wetland beginning at MP 0.36 from the beginning of the segment. Move road fill materials to upland road sections and shape on roadway. Excavation work includes vegetation planting to re-establish wetland vegetation.Quantity Summary: 490 cy road fill excavation.
6	T60N, R11W, S34	Old temporary logging road north from FR 112: 1. Remove 110 cy of road fill from wetland beginning at MP 0.25 from the beginning of the segment. Remove 18" X 19-ft long culvert and haul to Denley Pit. 2. Place road blockage 100-ft from FR 112.Move road fill materials to upland road sections and shape on roadway. Excavation work includes vegetation planting to re-establish wetland vegetation.Quantity Summary: 110 cy road fill excavation
7	T60N, R10W, S12	Old segment of FR 378B: 1. Remove 160 cy of roadway fill material and an 18" X 17-ft long culvert from the stream channel and floodplain. Haul culvert to Denley Pit. Vegetate as is practical. Re-establish free-flow of the stream channel.Move road fill materials to upland road sections and shape on roadway. Allow for parking on the road prior to reaching the floodplain. Excavation work includes vegetation planting to re-establish wetland vegetation. Quantity Summary: 160 cy road fill excavation
8	T60N, R11W, S19	Old temporary logging road: 1. Remove 120 cy of road fill from wetland beginning at MP 0.00 at the beginning of the segment from FR 1431. Remove 12" X 18-ft long culvert and haul to Denley Pit. Move road fill materials to upland road sections and shape on roadway. Excavation work includes vegetation planting to re-establish wetland vegetation. Quantity Summary: 120 cy road fill excavation
9	T60N, R12W, S27	Abandoned segment of FR 423 at Dunka River: 1. Remove 840 cy of road fill from the Dunka River floodplain beginning at MP 1.60 on FR 423. The floodplain width is 400 ft. Streambed is rocky. Move road fill materials to upland road sections and shape on roadway. On the east side of the river, create a parking area and shape fill to denote end of road (berms). Excavation work includes vegetation planting to re-establish wetland vegetation. Quantity Summary: 840 cy road fill excavation
10	T64N, R12W, S22	Old temporary logging road (3.3 miles east of Echo Trail off of FR 459): 1. Remove 185 cy of roadway fill material and a 24" X 29-ft long culvert from the stream channel and floodplain at MP 0.01. Haul culvert to gravel pit located 1 mile east along FR 459. Vegetate as is practical. Re-establish free-flow of the stream channel. Move road fill materials to upland road sections and shape on roadway. Excavation work includes vegetation planting to re-establish wetland vegetation. Quantity Summary: 185 cy road fill excavation
11	T61N, R11W, S10	Abandoned segment of FR 1902:

Project#	Road Project Location	Description of Work Activities
		1. Remove 550 cy of roadway fill material and a 48" X 30-ft long culvert from the stream channel and floodplain at MP 1.5 from the north access from Hwy 1. Haul culvert to Denley Pit. Vegetate as is practical. Re-establish free-flow of the stream channel. Wetland is 200-ft across. Move road fill materials to upland road sections and shape on roadway. Excavation work includes vegetation planting to re-establish wetland vegetation. Quantity Summary: 550 cy road fill excavation
12	T62N, R11W, S27	Abandoned segment of FR 181C: 1. Remove 185 cy of road fill from wetland beginning at MP 0.10 from the beginning of the road. Install a road blockage for 100-ft entering wetland. 2. Remove 25 cy of road fill from wetland beginning at MP 0.21. 3. Remove 25 cy of road fill from wetland beginning at MP 0.26. Move road fill materials to upland road sections and shape on roadway. Excavation work includes vegetation planting to re-establish wetland vegetation. Quantity Summary: 235 cy road fill excavation.
13	T60N, R12W, S21	Old temporary logging road: 1. Remove 425 cy of road fill from wetland beginning at MP 0.50. Access for backhoe and dozer only from Dunka Mine Road. Move road fill materials to upland road sections and shape on roadway. Excavation work includes vegetation planting to re-establish wetland vegetation. Quantity Summary: 235 cy road fill excavation.
14	T62N, R11W, S03	Tomahawk snowmobile Trail: 1. Install 5 drainage dips at locations staked on the trail by the Government. Each dip will be about 20-ft long by 8-ft wide by 1.5-ft deep to create a rounded drainage swale. Place 2 cy of 1.5" drain rock (avg. 3" thickness) on each dip to protect against erosion. Construct an outlet ditch as needed at each dip (assume 20-ft each). Quantity Summary: 5 drainage dips (10 cy drain rock)
15	T61N, R13W, S13	Old temporary logging road: 1. Remove 25 cy of roadway fill material at first creek crossing east of powerline (MP 0.2) and re-establish the natural drainage way. Place road blockage on the west side of this wetland restoration. Move road fill materials to upland road sections and shape on roadway. Excavation work includes vegetation planting to re-establish wetland vegetation. Quantity Summary: 25 cy road fill excavation.

**Road Decommissioning & Watershed Improvement Projects
Kawishiwi District**

Project #	Project Location	Method of Measure	Pay Unit	Estimate of Quantity	Unit Prices	Amount
1	T62N, R11W, S32	DQ	LS	1	\$ 11,800	\$ 11,800
2	T62N, R11W, S32	DQ	LS	1	\$ 3,560	\$ 3,560
3	T60N, R10W, S28	DQ	LS	1	\$ 7,300	\$ 7,300
4	T60N, R11W, S03	DQ	LS	1	\$ 1,240	\$ 1,240
5	T60N, R11W, S03	DQ	LS	1	\$ 4,020	\$ 4,020
6	T60N, R11W, S34	DQ	LS	1	\$ 1,280	\$ 1,280
7	T60N, R10W, S12	DQ	LS	1	\$ 1,480	\$ 1,480
8	T60N, R11W, S19	DQ	LS	1	\$ 960	\$ 960
9	T60N, R12W, S27	DQ	LS	1	\$ 6,720	\$ 6,720
10	T64N, R12W, S22	DQ	LS	1	\$ 1,480	\$ 1,480
11	T61N, R11W, S10	DQ	LS	1	\$ 5,500	\$ 5,500
12	T62N, R11W, S27	DQ	LS	1	\$ 2,080	\$ 2,080
13	T60N, R12W, S21	DQ	LS	1	\$ 4,250	\$ 4,250
14	T62N, R11W, S03	DQ	LS	1	\$ 1,050	\$ 1,050
15	T61N, R13W, S13	DQ	LS	1	\$ 450	\$ 450
					Total =	\$ 53,170

Temporary Road Obliteration Within Gunflint/CEQ Salvage Sales

The Gunflint Corridor EIS Decision stated that "Approximately 22.2 miles of temporary roads will be constructed and obliterated after use." The CEQ decision stated "all temporary roads (approximately 4.9 miles) will be closed and obliterated upon completion of the fuel reduction projects" Obliteration in the analysis is defined as "...removing all drainage structures & closing access roads. Re-contouring of roads will be done (cut & fill slopes will be returned to contour)." On 6/5/05 I documented the status of 11 temporary roads decommissioned in 2001 as part of the above mentioned sales. Each site has had at least 4 growing seasons following obliteration.

Roads

Gunflint Polygon 106.2.



Before-7-20-01



After-6-16-05

Gunflint Polygon 108.



Before-7-20-01



After-6-16-05

Gunflint Polygon 110.



Before-7-20-01



After-6-16-05

Gunflint Polygon 129-Tucker Lake.



Before-7-20-01



After-6-16-05

Gunflint Polygon 147.



Gunflint Polygon 156.6.



Gunflint Polygon 26-29.



Before-7-20-01



After-6-16-05

Gunflint Polygon 74.



Before-7-20-01



After-6-16-05

Gunflint Polygon 75.



After-6-16-05

Gunflint Polygon 156.3.



Before-7-20-01



After-6-16-05

Gunflint Polygon 77.



Before-7-20-01



After-6-16-05

Gunflint Polygon 202.



Before 5-9-05



After-6-16-05

Riparian

Cross River Tributary. Polygon 202.



Before-5-9-01



After-6-16-05

Conclusions

Road obliteration projects Practices outlined within the Gunflint and CEQ decisions were implemented and found to be effective. After three to four growing seasons, many of the obliterated roads blend into the landscape and in many instances were difficult to re-find. None of the obliterated road projects had evidence or impacts of ATV travel.

In addition stream restoration as part of road obliteration project within a tributary of the Cross River, appeared successful.

Seventeen roads were obliterated at a total cost of \$12,500. This averaged \$750 per project.

Road obliteration practices implemented within the Gunflint and CEQ project areas resulted in desired landscape conditions and as such should serve as a template for subsequent road management objectives outlined in the Revised Forest Plan. Specifically I recommend:

- (1) Implement proven road decommissioning practices (re-contouring, drainage re-establishment, plantings etc) similar to those practiced as part of the fuel reduction projects.
- (2) Restrict access via gates or other barriers, signing, and Closure Order at the beginning point of each decommissioned road.
- (3) During the first 2 years following decommissioning, actively monitor/patrol road for unauthorized use, particularly during anticipated high RMV user periods (hunting season).
- (4) Once road corridor has re-vegetated and blends into its surroundings, remove gate and sign.

Additional information including average decommissioning costs can be found in the 2001 July 4th Monitoring Summary.

Bruce D Anderson
Forest Monitoring Coordinator

Observations in Tomahawk Project Area. 4/21/05

Selected resource conditions in the Tomahawk EA project area were visited in April 2005. In particular I documented resource conditions of older (previous) harvest & road building activities that occurred within the vicinity of proposed temporary road construction and decommissioning activities. Areas visited were: (1) Road 903 (scheduled for decommissioning) within units 183 & 184. (2) Unclassified Road U7147104 off of road 1471 (scheduled for decommissioning). (3) The north section of Road 387 (to be decommissioned). (Refer to Figure 1.4b in the EA). I also visited the Road 1479 area to evaluate "past actions" (Refer to Figure 3.1.1 in the EA). Following is partial documentation for road decommissioning, past timber practices, and OHV impacts within the Tomahawk project area. Several roads associated with previous timber sales were documented.

Road 903 Area



P10. Old temp rd -South of FR 903 Difficult to discern road.



P7. Old Temp road -South of FR 903 Difficult to discern road.

Road 1471 Area



P03. Old temp Rd west of FR 1471 and U7147104 jct. Very Difficult to discern road.



P05. Old temp Rd east of FR 1471 and U7147104 ict Verv Difficult to discern road

Road 387 Area



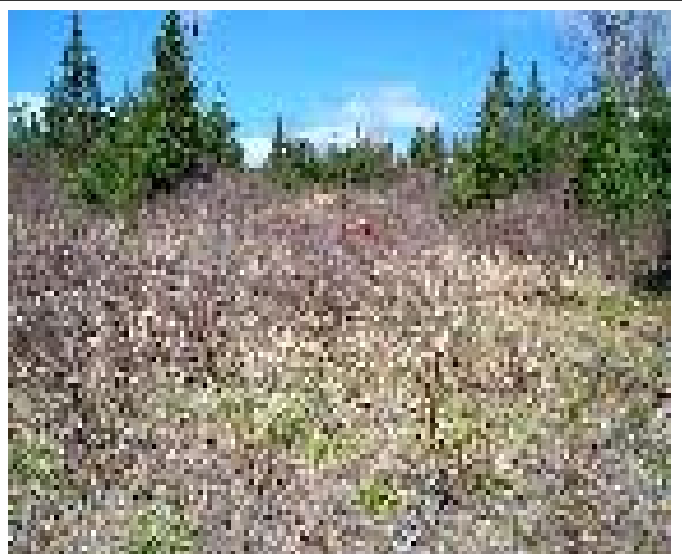
P09.Old Temp rd near FR387A. Difficult to discern road.



P10.Old Temp rd near FR387A. Difficult to



P13.Old Temp rd NE of FR387A 387 jct.
Difficult to discern road.



P 02. Old Temp Rd off FR 387.NE S.13.
Difficult to discern road.

Observations. We observed that the majority of older temporary roads through either active or passive management re-vegetated and blended into the landscape. The estimated age of roads was 10 to 15 years old. Most old roads were used as travel ways by moose & deer.

Cumulative Effects-Past Timber Sales. Big Grass Point (2).. *The Court finds that simply listing past timber sales on public land, without providing a more detailed analysis of the cumulative effects of those sales, does not constitute the "hard look" required under NEPA....Demonstrating its lack of analysis of*

cumulative impact, a portion of the EA concedes that "[i]t is unknown what has been harvested on private lands."

We documented several stands from older previous timber sales and one recent thinning operation to assess vegetative re-growth, skid trails, and landings.



Past Timber Sales contd.



P.03. Regeneration off FR 387.NE S.13.



P07. Re-germation off FR 387.NE S.13.

Observations. We observed that all older vegetative treatments had re-vegetated and old landings and skid trails blended into the surrounding landscape. The estimated age of treatments was 10 to 15 years old. Impacts from the recent pine thinning appeared minimal. Rutting & other soil disturbances were not encountered.

OHV Impacts

ATV impacts were encountered on that section of the 387 road scheduled for de-commissioning.



P03. ATV Impacts on FR 387.NE S.13.



P04. ATV Impacts on FR 387.NE S.13.

Conclusions

Effects of prior vegetative treatments and road building were ameliorated with time. These observations were made within habitats similar to those scheduled for vegetative treatments, temporary road construction and decommissioning. Subsequently one could expect similar recovery from proposed actions in the Tomahawk project area. However, recreation motor vehicles and their associated impacts were less common when the older sales and roads were closed 10 to 15 years ago. Accordingly management practices used then, (berms etc) would probably not be effective today. Despite the prevalence and popularity of RMV's today, road management practices implemented on the SNF in recent years as part of fuel reduction projects have been effective.

Moreover, administrative actions such as signing, closure orders, public education, and enforcement associated with the Forest's 9/04 OHV policy are now in place

Consequently;

(A) Roads slated for decommissioning in the Tomahawk project can be successfully accomplished provided the following steps are taken:

- (1) Implement proven road decommissioning practices (re-contouring, drainage re-establishment, plantings etc) similar to those practiced as part of the fuel reduction projects.
- (2) Restrict access via gates or other barriers, signing, and Closure Order at the beginning point of each decommissioned road.
- (3) During the first 2 years following decommissioning, actively monitor/patrol road for unauthorized use, particularly during anticipated high RMV user periods (hunting season).
- (4) Once road corridor has re-vegetated and blends into its surroundings, remove gate and sign.

(B) Rapid re-vegetation of treatment areas including skid trails and landings through plantings and natural succession can be expected following treatments.

Bruce D Anderson
Forest Monitoring Coordinator

Temporary Road Obliteration Within Pine Otto Salvage Sales

The Pine/Otto NEPA Decision stated that approximately 8 miles of temporary roads will be constructed/re-opened to access salvage units. Following use roads would be closed "to a level to ensure effective closure & maintain visual quality objectives. Roads will be seeded with an approved seed mix if necessary, or depending on site conditions, will naturally re-vegetated to native species." On 8/4/05 I documented the status of 6 temporary roads decommissioned in 2002 as part of the Pine/Otto sales. Each site has had at least 4 growing seasons following obliteration.

Berry Creek Unit 12.



Before-6-26-02



After-8-4-05



Before-6-26-02



After-8-4-05

Berry Creek Unit 12 (Continued)



Before-6-26-02



After-8-4-05



Before-6-26-02



After-8-4-05

Berry Creek Unit 12 (Continued)



Before-6-26-02



After-8-4-05

Bum Creek. Unit 3.



Before-6-26-02



After-8-4-05

Bum Creek. Unit 3 Continued



Before-6-26-02



After-8-4-05

Bum Creek. Unit 5.



Before-6-26-02



After-8-4-05

Bum Creek. Unit 5.Continued



Before-6-26-02



After-8-4-05

Reno Creek. Unit 12.



Before-6-26-02



After-8-4-05

Reno Creek. Unit 9.



Before-6-26-02



After-8-4-05



Before-6-26-02



After-8-4-05

Reno Creek. Unit 9. Continued



Before-6-26-02



After-8-4-05

Conclusions

Road obliteration projects Practices outlined within the Pine/Otto decisions were implemented and found to be effective. After three to four growing seasons, many of the obliterated roads blend into the landscape and in many instances were difficult to re-find. None of the obliterated road projects had evidence or impacts of ATV travel. Under one contract five roads were obliterated for around \$1000. This averaged \$250 per project. When combined with average road costs of \$750/ per for the Gunflint salvage operations, average cost per road is \$500.

Road obliteration practices implemented within the Pine/Otto project areas resulted in desired landscape conditions and as such should serve as a template for subsequent road management objectives outlined in the Revised Forest Plan. Specifically I recommend:

- (1) Implement proven road decommissioning practices (re-contouring, drainage re-establishment, plantings etc) similar to those practiced as part of the fuel reduction projects. When near OML 3 or 4 roads, emphasize large shrub and tree plantings or plugs to expedite vegetative screening.
- (2) Restrict access via gates or other barriers, signing, and Closure Order at the beginning point of each decommissioned road.
- (3) During the first 2 years following decommissioning, actively monitor/patrol road for unauthorized use, particularly during anticipated high RMV user periods (hunting season).
- (4) Once road corridor has re-vegetated and blends into its surroundings, remove gate and sign.

Bruce D Anderson
Forest Monitoring Coordinator